PHENIX

Technical Support 2007

# PHENIX
# WEEKLY PLANNING

12/20/2007

Don Lynch

# Run 8 Task Schedule

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| Item | Start | Finish |
|---|---|---|
| RPC Tent preparation (see slides) | On Going | On Going |
| ~~Install Gas house UPS's~~ | ~~12/3~~ | ~~12/10~~ |
| Next scheduled Maint. Day | 1/2 | 1/2 |
| Install new UPS | ~2/2 | ~2/9 |
| Switch to p+p run | ~2/2 | ~2/9 |
| Mu Trigger FEE Prototype II install | ~2/2 | ~2/2 |
| Complete new beampipe design | 2/29 | 2/29 |
| Install HBD West for test run | ~4/1 | ~4/1 |
| End of Run 8 ~~3~~ (less than ~~3~~ mos away) | 2/29 ? | 5/27 ? |
| End of Run Party | 3/7 ? | 6/13? |

# Yesterday's Maintenance Access Day

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Routine Maintenance on:

RXNP Thermal noise measurements taken. Unclear about the results.

EmCal 1 ASIC WB changed, the data looks ok after repair.

MuTr Changed 1 Arcnet board. Problem fixed.

TEC 1 sector was noisy, fixed the gas regulation. May resolve the problem.

MPC South side, 4x4 and 2x2 cables were swapped

MuID Worked on some HV modules.

BBC Laser event timing did not changed with the new v124 firmware.

AC crew work as usual

Measurements for new racks and rack platforms

# 2008 PHENIX Shutdown Prep

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January-May 2008:

- Run 8 technical support
- RPC factory support
- new beam pipe design completion and review
- CM Crane design review and purchase placement
- Muon Trigger FEE prototype test ?
- MMN station 1 & 2 scaffolding design
- Muon Trigger Rack platform design and review
- RPC3 installation review (support structure, transport and installation fixture design, tunnel vapor barrier modification design, gas mixing and distribution system and piping design).
- VTX, FVTX & NCC technical support

# CM Ladder/Stair Shutdown Access

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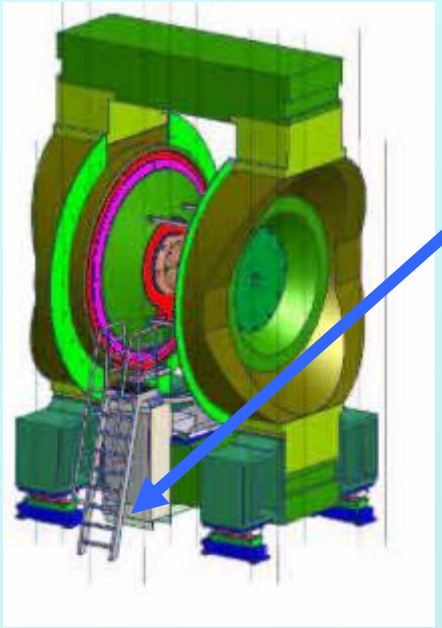
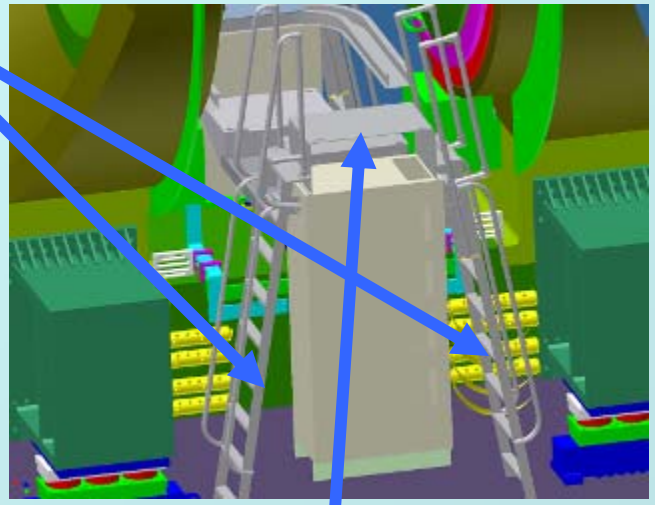
These ladders rec'd





Still waiting for Top of stair landing, in shop, expect ~ 2weeks

Field fit components during next few maintenance accesses; install on west during end of d-Au run access

# RPC Factory Support

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- **Safety System now operational**
- **Need SF6 Calibration Limits:**
  **From MSDS-**
  Major hazard : Suffocation and High Pressure
  Toxicity (Am. Conf. Of Gov. Ind. Hygienists ACGIH 2000 Edition) : 1000 ppm
- **Set alarm level to some low fraction of toxicity, say 50 PPM ?**
- **Need Safety Walkthru**

# RPC Factory Issues, cont.

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Electrical – Done !! ?

Safety systems – Installation complete, mini-blue sheet

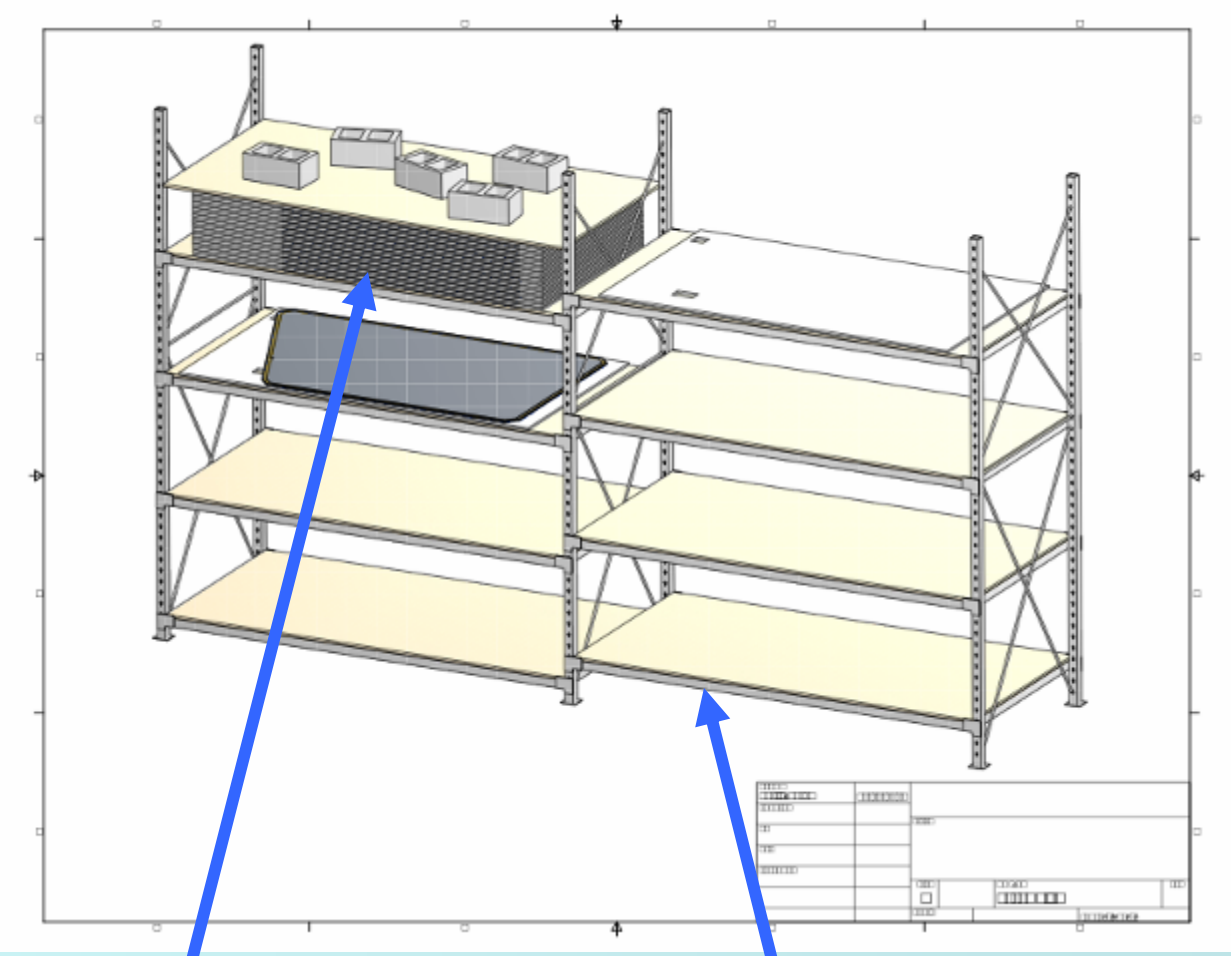
Equipment – Need specs for $T^3$ (Tilting Transport Table) and GMHOS (gap, module and ½ octant storage) racks, then need to fabricate assemble and install.

Work plan – Add gas system description (Done) and checkout (mini-blue sheet procedure, in progress) to Gas system procedure as appendix A. Production operations require work plan update to include factory gas operation and final assembly/test procedures.

Security –RPC group to review C-A policy (3 tier requirement as required by C-A procedure 1.20) RPC group will prepare a one page description of how they intend to comply with this requirement. This will be reviewed by C-A.

# GMHOS





20 RPC3C modules spaced apart by the 1/2 in foam spacer

HEAVY-DUTY Z-BEAM STORAGE RACK

Rusty's factory schedule for assembling 10 modules:

Gap QA (gas leak, HV, popped spacer) ~1week

Assembling modules (stacking, soldering, connect gas, HV, …) ~ 1 day/module or 2 weeks for 10

This schedule produces 10 modules in 3 weeks, which is about as fast as they can be tested in the cosmic test stand.

To assemble the modules for RPC3 N will take about 6 * 3 weeks = 18 weeks or 4.5 months.

# RPC Factory Issues, cont.

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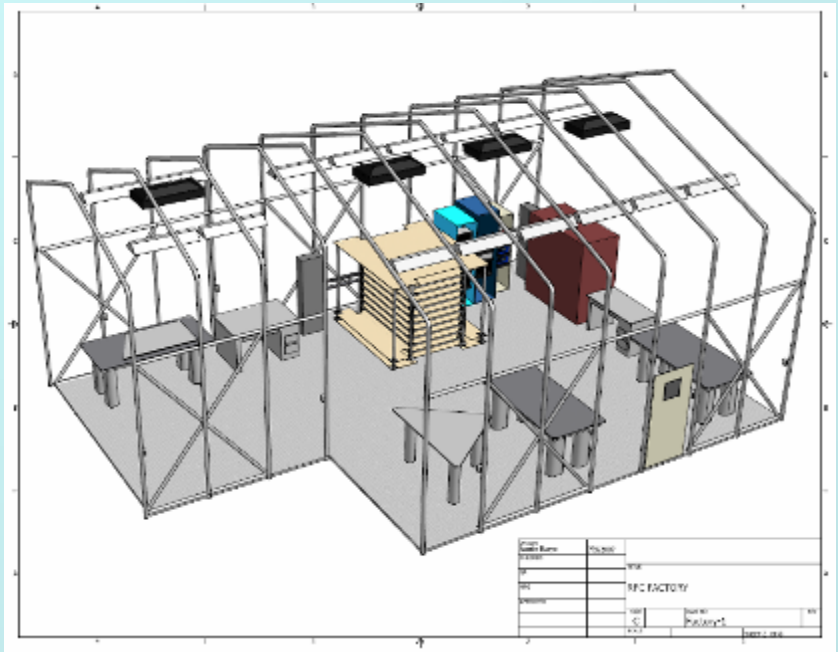
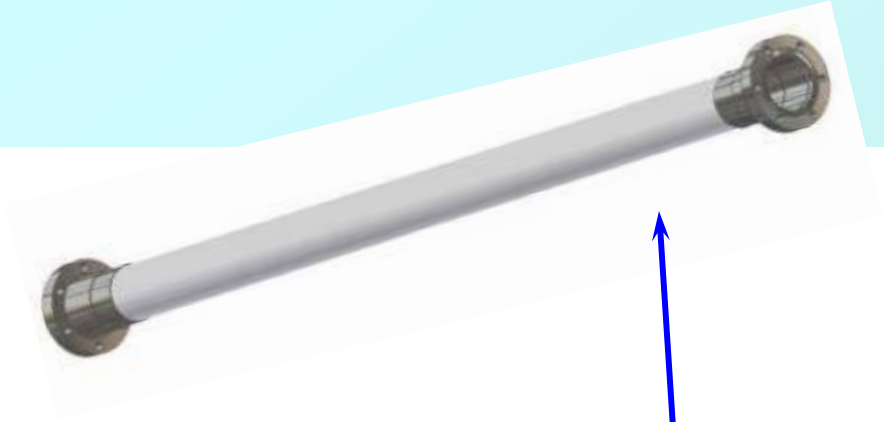
Remaining Action Items from C-A safety review:

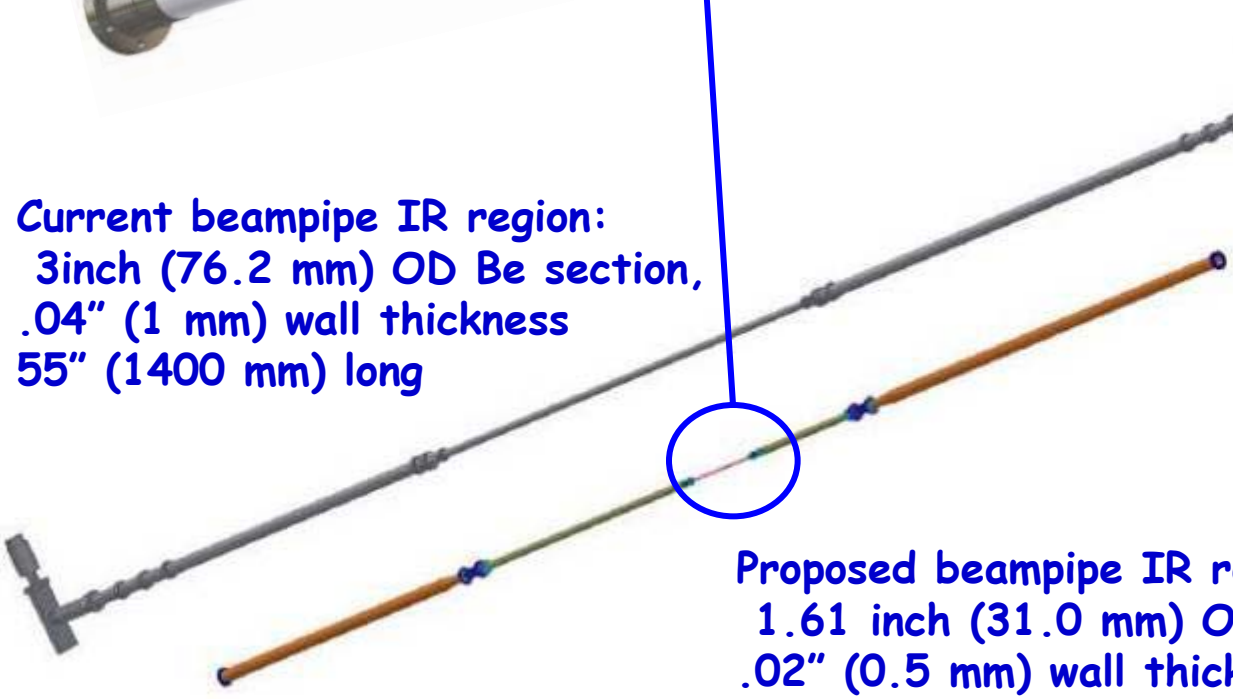
- Gas monitoring equipment to be calibrated and tested per BNL requirements – Equipment is manufacturer calibrated. Will be tested with mini "blue sheet" check out.
- Max flow rates incl. chambers in storage for all gases to be forwarded to M. van Essendelft – still needs to be done before factory startup
- Approved security apparatus to protect against theft – see above



# New Beampipe Design & Review



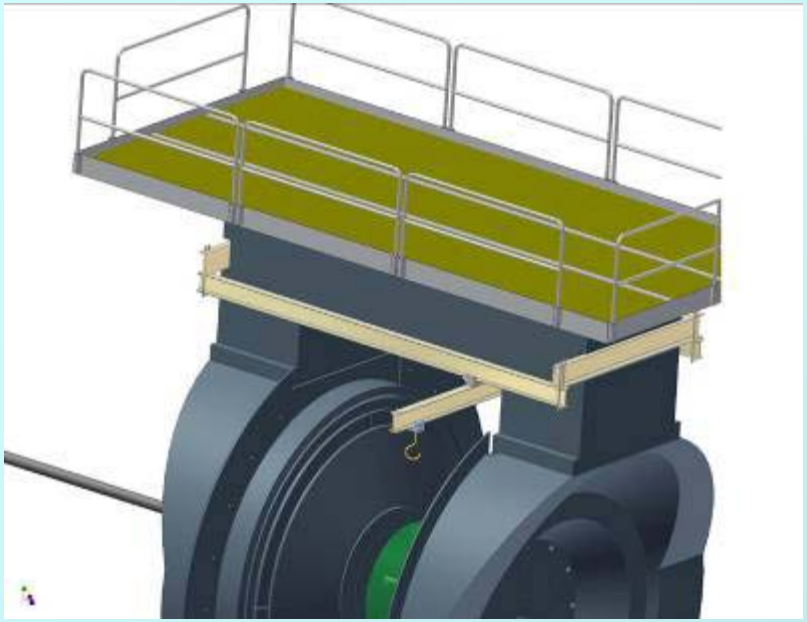
Current beampipe IR region:
3inch (76.2 mm) OD Be section,
.04" (1 mm) wall thickness
55" (1400 mm) long



Design to be ready for final review by 2/29/08

Proposed beampipe IR region:
1.61 inch (31.0 mm) OD Be section,
.02" (0.5 mm) wall thickness
31.5" (800 mm) long

# CM Crane



- Crane Design nearly ready for review
- Uses Gorbel 1-ton capacity Ceiling mounted Bridge Crane, modified to be supported by 2 Steel Channels attached to CM
- Bridge and hoist to be removed for running.

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# Muon Trigger FEE Prototype Test II

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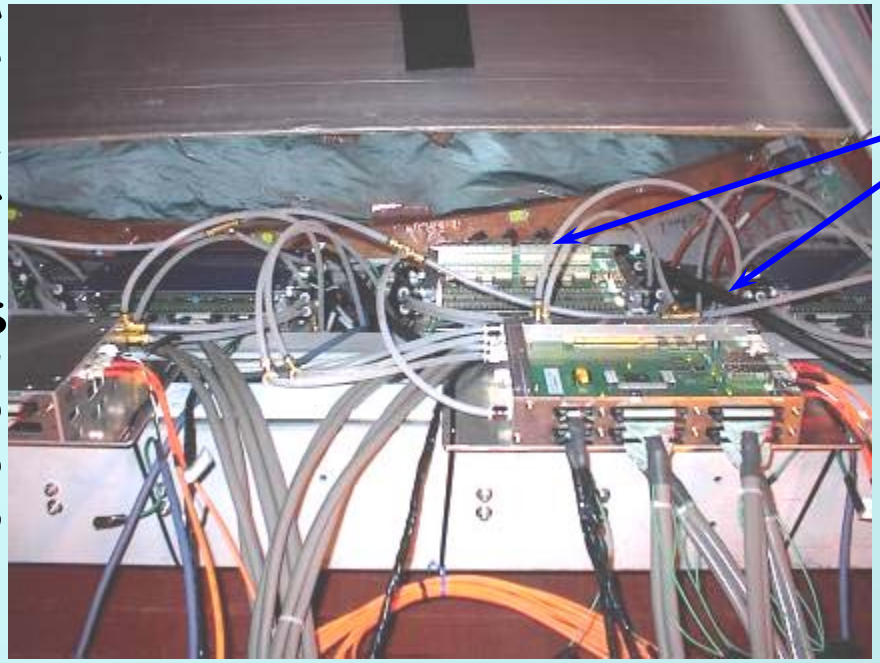
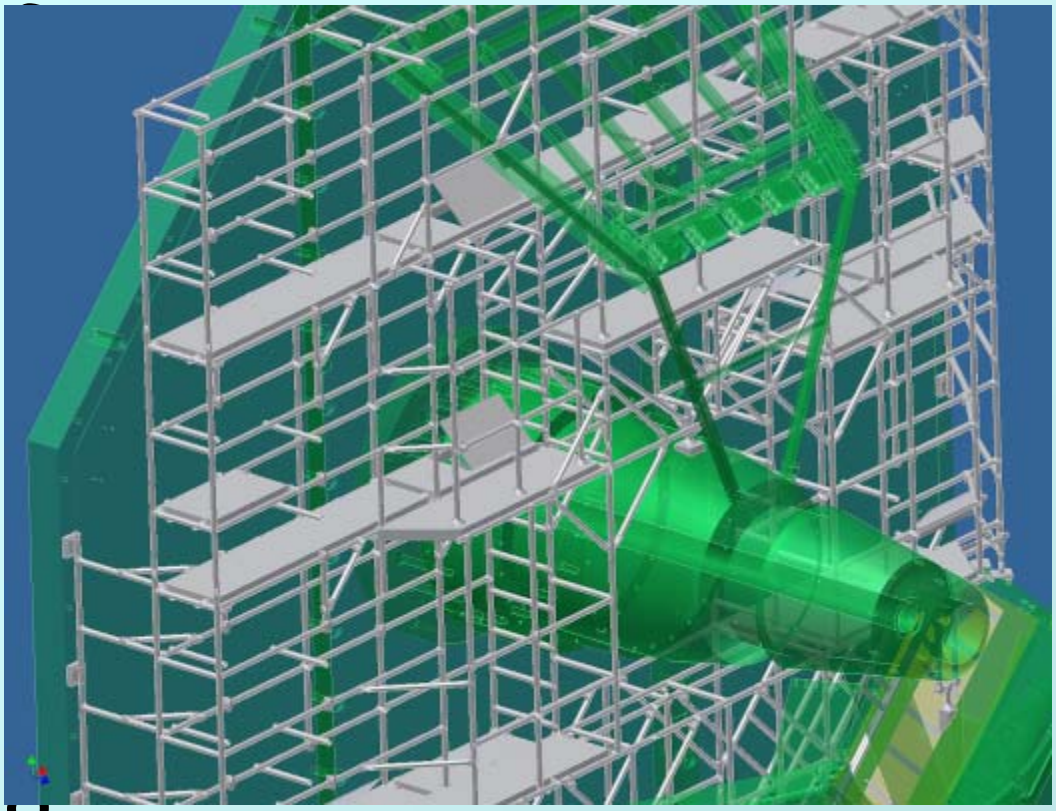


Test this past summer used separate AD and TX electronics.

- New plan combines the two into 1 more compact package.
- Experimental Safety Review is required
- Confined space work permit required.

# MMN Scaffolding



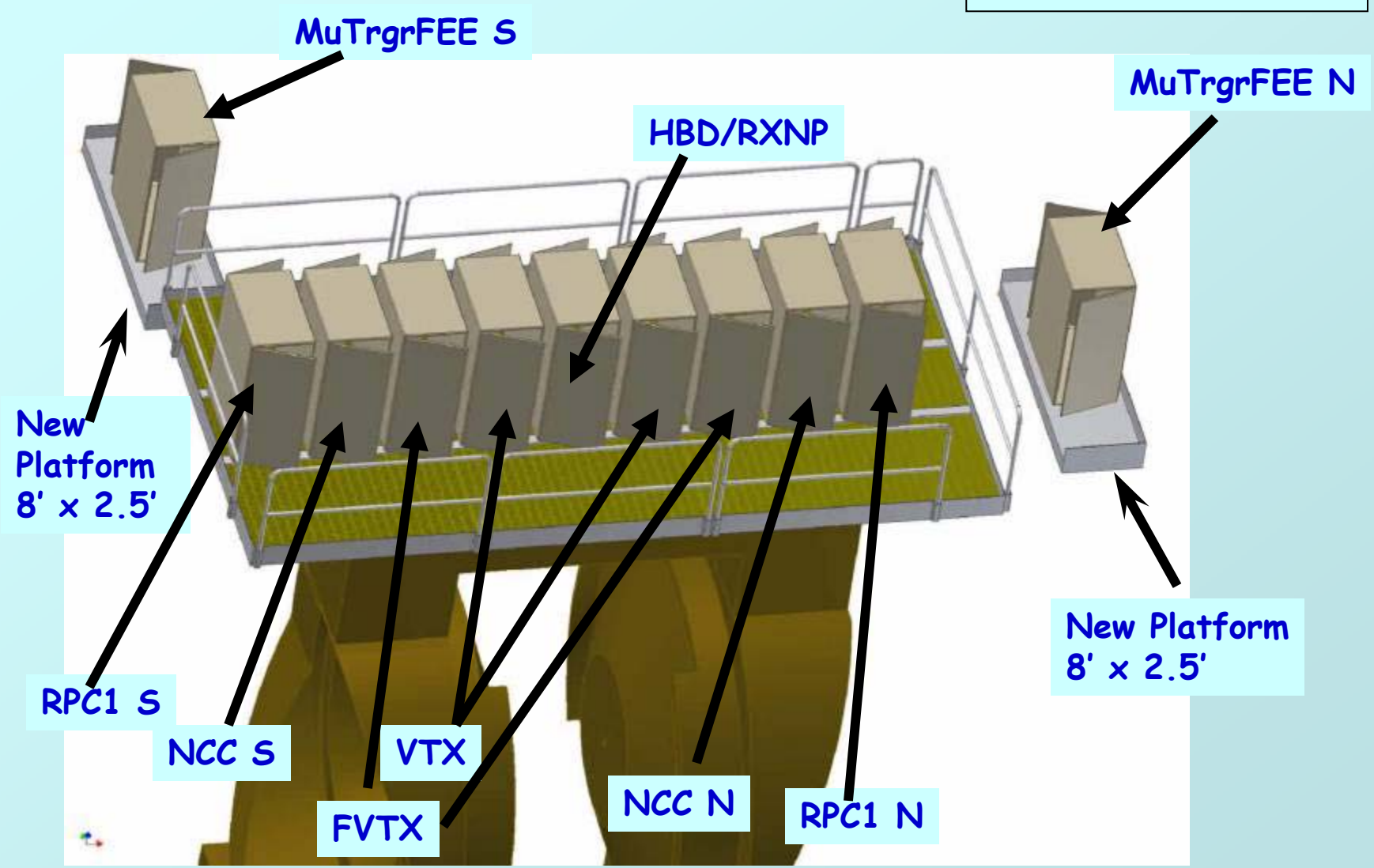
Existing MMN MuTr scaffolding is being redesigned to be assemble-able with only one lampshade removed and access to all station 2&3 FEE's from lower hatch.

Additional scaffolding to be designed to access all Station 1 North FEE's and lampshade sites adjacent to station 1.

Station 1 North scaffolding to be useable for Station 1 South with minimal modification.

Station 2 & 3 South scaffolding to be addressed later

# Muon Trigger Rack Platforms

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# RPC & MuTrigger Cont'd

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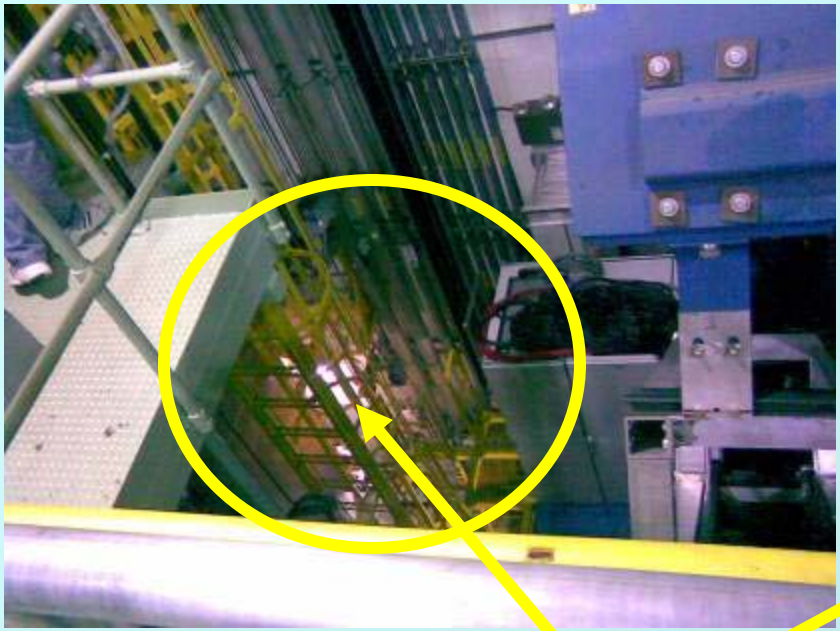

On the south side above the MMS upper bias lampshade there is space. Interferences with removing lampshades on west side of MMS and moving MMS east-west for maintenance need to be dealt with

# RPC 3 Design Review

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- 2008 shutdown: install one RPC 3 South and one RPC 2 South prototype half octant: requires installation fixtures, prototype gas system, modifications to tunnel vapor barriers, prototype electronics, cable routing support, and, of course, structural support design
- All require both functional and safety reviews (may be combined) by ~June 2008. Assume installation in Aug.-Sept. 2008.

# NCC, VTX & VFTX support

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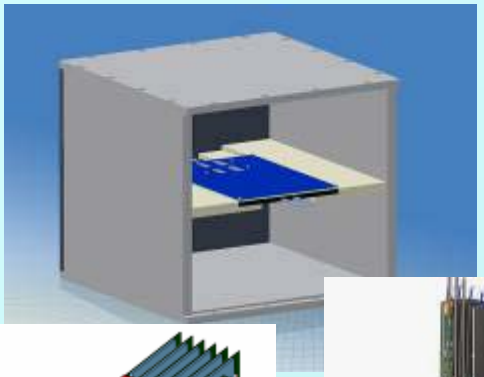

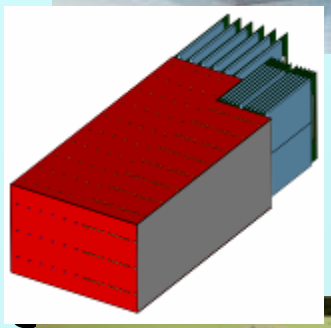

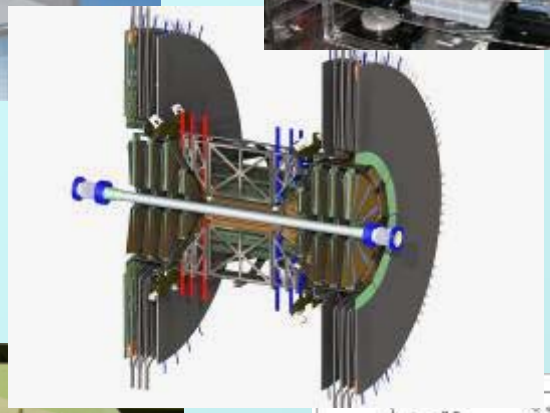

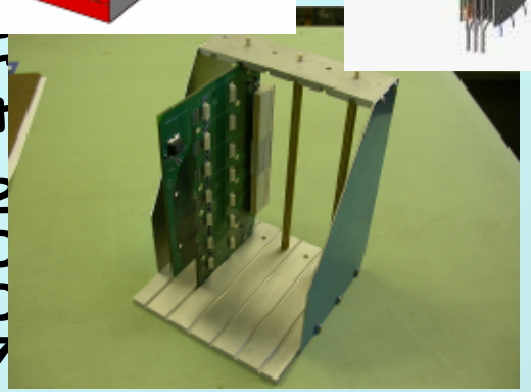

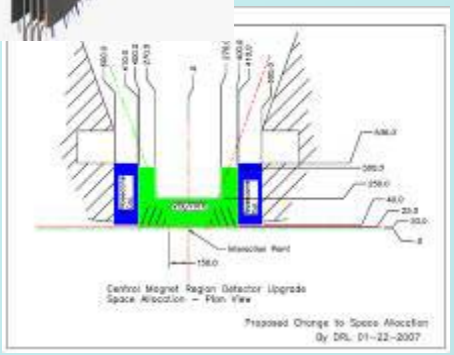


- VTX, FVTX and NCC prototype support
- Integration
- Physical and Rack space
- Infrastructure upgrades

# 2008 PHENIX Shutdown

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June 2008: Remove MuID collar, disengage EC and move to AH, prep IR for shutdown work, remove MMS lampshade, begin MuTr "decapacitor" removal, continue RPC factory construction, receive and install CM crane, complete design reviews, prepare work permits, move CM south, 1 Cu absorber install

July 2008: Re-Install HBD, RPC prototype gas system, Move shielding for RPC installation, RPC prototype cable routing and support, modify crystal palace and tunnel vapor barrier, fabricate RPC installation fixtures, install MMN Station 2 & 3 scaffolding, TBD

August 2008: Install RPC prototypes, install Mu Trigger FEE's in MMS and MMN, Install N&S rack support platforms for Mu Trigger FEE's. Install MMN cooling water and air supply for MMN. TBD prototype tests, TBD infrastructure work

September 2008: Replace tunnel shielding, connect electronics, gas, water and air as necessary for RPC and Mu Trigger FEE,

October 2008: Prepare for run, EC into IR, install collars, build shield wall, etc.

November 2007: blue sheets, white sheets, close wall, start shifts, flam. Gas, physics

# Other Work

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- Clean Out Container: Material is evaluated. Clean out and dispose by end of Nov.
- Procedure review – pick up where we left off
- JTA review - Nearly Complete

# Safety, Security, Etc. :

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1. Training: JTA evaluation nearly complete.

2. DOE Safety Review: Generally a good review, minor criticisms.

3. *6* changes which may affect a work plan (worker planned, prescribed or permitted)

   a. Change in Location
   b. Change in sequence
   c. Change in Equipment
   d. Change in Roles & Responsibilities
   e. Change in work conditions
   *f. CHANGE IN FUNDING*

   When changes are encountered stop and take a moment to determine if additional, modified, expanded work planning is necessary

# *ES&H Ratings*

Office of Health, Safety and Security

| Core Functions of ISM | CF#1 – Define Scope of Work | CF#2 – Analyze Hazards | CF#3 – Develop and Implement Controls | CF#4 – Perform Work Within Controls |
|---|---|---|---|---|
| NSLS | Effective Performance | Effective Performance | Effective Performance | Needs Improvement |
| Small Science | Effective Performance | Needs Improvement | Needs Improvement | Needs Improvement |
| Maintenance | Effective Performance | Needs Improvement | Needs Improvement | Needs Improvement |
| Construction | Effective Performance | Needs Improvement | Needs Improvement | Effective Performance |

| Feedback and Continuous Improvement CF-5) | |
|---|---|
| SC and BHSO | Needs Improvement |
| BSA | Needs Improvement |

# BNL's Injury Performance

**FY07**

- Total: 109 persons injured
- 47 **recordable** injuries (TRC)
- 26 of these resulted in time **away from work** (DART)
- 64 first aid cases
- >50 % injuries due to lack of or improper PPE

**FY08 ( as of 12/11/07)**

- Total: 24 persons injured
- 6 recordable injuries
- 2 of these resulted in time away from work
- 18 first aid cases
- ~50 % of injuries due to slips/trips/falls

# 5 Year Plan

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| | |
|---|---|
| 2008 | Install stations 1& 2 of MuTr FEE upgrades (north), 1 octant Cu absorber (S), 2 half otants RPC2/3 S, infrastructure upgrades & repairs, misc. subsystem work, MMN scaffolding |
| 2009 | Scaffolding in MMS, MuTr FEE N stn. 1,2 & 3, MuTr N&S stn. 1,2 & 3 repairs, RPC2 N, RPC3 N, north Cu absorbers, infrastructure upgrades & repairs, misc. subsystem work |
| 2010 | Remove HBD & RXNP, remove beampipe, DC West upgrade, VTX barrel, south Cu absorber completed, MuTr FEE stn. 3 S, MuTr stn. 1, 2 & 3 S repairs, infrastructure upgrades & repairs, misc. subsystem work |
| 2011 | RPC1 N&S, NCC S, FVTX, infrastructure upgrades & repairs, misc. subsystem work, remove south absorber |
| 2012 | NCC N, upgrades contingency & wishlist, infrastructure upgrades & repairs, misc. subsystem work, remove north absorber |

** Years refer to the shutdown year and follow the run with the similar number (i.e. work in 2008 is to be done in the shutdown that follows run 8, and so on)*

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# Where To Find PHENIX Technical Info


Links for the weekly planning meeting slides, long term planning, pictures, videos and other technical info can be found on the web site:

http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_SSint-page.htm